2008

Test 1944: Kubota M108S

Nebraska Tractor Test Laboratory

NEBRASKA TRACTOR TEST 1944
KUBOTA M108S DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—637 rpm)					
101.74 *(75.87)*	2601	6.27 *(23.75)*	0.430 *(0.262)*	16.22 *(3.19)*	
Maximum Power(1 hour)					
103.17 *(76.93)*	2499	6.22 *(23.54)*	0.421 *(0.256)*	16.59 *(3.27)*	
Standard Power Take-off Speed(540 rpm)					
99.27 *(74.03)*	2205	5.79 *(21.90)*	0.407 *(0.247)*	17.16 *(3.38)*	
VARYING POWER AND FUEL CONSUMPTION					
101.74 *(75.87)*	2601	6.27 *(23.75)*	0.430 *(0.262)*	16.22 *(3.19)*	Air temperature
87.84 *(65.50)*	2643	5.58 *(21.11)*	0.443 *(0.269)*	15.75 *(3.10)*	77°F *(25°C)*
66.93 *(49.91)*	2682	4.57 *(17.31)*	0.477 *(0.290)*	14.64 *(2.88)*	Relative humidity
45.20 *(33.71)*	2717	3.45 *(13.08)*	0.533 *(0.324)*	13.09 *(2.58)*	15%
22.81 *(17.01)*	2747	2.38 *(9.01)*	0.728 *(0.443)*	9.59 *(1.89)*	Barometer
1.17 *(0.87)*	2781	1.39 *(5.26)*	8.312 *(5.056)*	0.84 *(0.17)*	29.17"Hg *(98.78 kPa)*

Maximum torque - 250 lb.-ft. *(339 Nm)* at 1649 rpm
Maximum torque rise - 21.6%
Torque rise at 2099 rpm - 16%

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Disengaged dB(A)	Front Wheel Drive Engaged dB(A)
At no load in 7th(1HL) gear	78.8	78.9
Bystander in 16th(4HH) gear	84.8	--

TIRES AND WEIGHT	Tested without ballast
Rear Tires–No., size, ply & psi *(kPa)*	Two 18.4-34; 8; 16 *(110)*
Front Tires–No., size, ply & psi *(kPa)*	Two 13.6-24; 8; 16 *(110)*
Height of Drawbar	18.5 in *(470 mm)*
Static Weight with operator– Rear	5630 lb *(2554 kg)*
– Front	3150 lb *(1429 kg)*
– Total	8780 lb *(3983 kg)*

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832
Dates of tests: November 18 - 21, 2008

Manufacturer: Kubota Corporation, Sakai Plant, 64, Ishizu-Kitamachi, Sakai-ku, Sakai-City, Osaka, Japan

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F *(15°/15°C)*** 0.8380 **Fuel weight** 6.977 lbs/gal *(0.836 kg/l)* **Oil SAE** 10W30 **API service classification** CF **Transmission and hydraulic lubricant** Kubota UDT 2 fluid **Front axle lubricant** SAE 90 gear oil **Total time engine was operated** 13.0 hours

ENGINE: Make Kubota Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.** 8S3679 **Crankshaft** lengthwise **Rated engine speed** 2600 **Bore and stroke** 3.937" x 4.724" *(100.0 mm x 120.0 mm)* **Compression ratio** 17.5 to 1 **Displacement** 230 cu in *(3769 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 42.1 - 45.1 lb/h *(19.1 - 20.5 kg/h)* **High idle:** 2700 - 2800 rpm **Turbo boost:** nominal 9.7-11.1 psi *(67 - 77 kPa)* as measured 10.8 psi *(74 kPa)*

CHASSIS: Type front wheel assist **Serial No.** 70086 **Tread width** rear 68.1" *(1730 mm)* to 80.1" *(2035 mm)* front 62.2" *(1580 mm)* to 66.1" *(1680 mm)* **Wheelbase** 95.9" *(2435 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph *(km/h)*** first 1.28 *(2.06)* second 1.63 *(2.62)* third 2.00 *(3.23)* fourth 2.46 *(3.96)* fifth 3.15 *(5.07)* sixth 4.01 *(6.45)* seventh 4.46 *(7.19)* eighth 4.94 *(7.95)* ninth 5.69 *(9.16)* tenth 6.05 *(9.74)* eleventh 7.02 *(11.29)* twelfth 8.60 *(13.84)* thirteenth 11.00 *(17.70)* fourteenth 14.01 *(22.55)* fifteenth 17.26 *(27.77)* sixteenth 21.15 *(34.04)* reverse 1.29 *(2.08)*, 1.65 *(2.65)*, 2.03 *(3.26)*, 2.48 *(3.99)*, 3.18 *(5.11)*, 4.04 *(6.51)*, 4.51 *(7.26)*, 4.98 *(8.02)*, 5.74 *(9.24)*, 6.11 *(9.83)*, 7.07 *(11.38)*, 8.67 *(13.95)*, 11.10 *(17.86)*, 14.13 *(22.74)*, 17.41 *(28.01)*, 21.34 *(34.34)* **Clutch** multiple wet disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2205 engine rpm **Unladen tractor mass** 8605 lb *(3903 kg)*

HYDRAULIC PERFORMANCE

CATEGORY: II
Quick attach: None
OECD Static test

Maximum force exerted through whole range:	3906 lbs *(17.4 kN)*	
	5765 lbs *(25.6 kN)* (with 2 assist cylinders)	
i) Sustained pressure of the open relief valve:	2812 psi	*(194 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	16.0 GPM	*(60.6 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	14.0 GPM	*(53.0 l/min)*
Delivery pressure:	2412 psi	*(166 bar)*
Power:	19.7 HP	*(14.7 kW)*

THREE POINT HITCH PERFORMANCE(SAE Static test)

Observed maximum pressure psi. *(bar)*	2800 *(185)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	150 *(65)*
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2520 psi *(174 Bar)*

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.0 *(381)*	22.0 *(559)*	29.0 *(737)*	36.0 *(914)*
Lift force on frame lb	6953	5733	5351	5346	4680
" " " " " " *(kN)*	*(30.9)*	*(25.5)*	*(21.3)*	*(23.8)*	*(20.8)*

SAE Static Test—System pressure 2520 psi *(174 Bar)*(2 assist cylinders)

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.0 *(381)*	22.0 *(559)*	29.0 *(737)*	36.0 *(913)*
Lift force on frame lb	11871	9450	8451	8280	7007
" " " " " " *(kN)*	*(52.8)*	*(42.0)*	*(37.6)*	*(36.8)*	*(31.2)*

	SAE Test		OECD Test	
	inch	*mm*	inch	*mm*
A	28.3	*718*	28.5	*724*
B	9.8	*250*	9.8	*250*
C	12.2	*311*	12.2	*311*
D	11.9	*303*	11.9	*303*
E	12.6	*321*	12.6	*321*
F	6.9	*176*	6.9	*176*
G	30.3	*770*	30.3	*770*
H	0.4	*10*	0.4	*10*
I	12.3	*312*	12.3	*312*
J	23.4	*594*	23.4	*594*
K	18.7	*474*	18.7	*474*
L	40.0	*1015*	40.0	*1015*
M	24.0	*610*	24.0	*610*
N	35.4	*900*	35.4	*900*
O	8.0	*203*	8.0	*203*
P	42.4	*1077*	47.4	*1204*
Q	34.8	*883*	34.8	*883*
R	24.5	*622*	24.5	*622*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

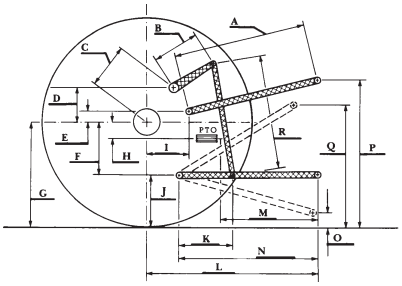
REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's claims of 17.2 GPM*(65.0 lpm)* hydraulic flow nor 3 point lift of 7490 lbs *(3400 kg)* with optional 2 assist cylinders. For the maximum power tests, the fuel temperature at the fuel filter was maintained at 120°F *(49°C)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1944,** February 5, 2009.

Roger M. Hoy
Director

M.F. Kocher
J.A. Smith
V.I. Adamchuk
Board of Tractor Test Engineers

HITCH DIMENSIONS AS TESTED - NO LOAD



Kubota M108S Diesel

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln